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PACIFIC RAILROAD.

[To accompany Bill H. R. No. 646.]

April 13, 1860.

Mr. Curtis, from the select committee on the Pacific railroad, made the following

REPORT.

The select committee, to whom were referred all matters relating to a Pacific railroad and telegraphic line, have had the same under consideration, and submit the following report:

The application of steam power to propel steamboats and locomo-ives has become almost universal among civilized nations. Every pursuit that requires celerity, certainty, and economy of movement, goes by steam; and although it is only about thirty-five years since railroads and locomotives were invented, it would now be considered preposterous to present arguments to prove their general necessity in he public and private affairs of the State. Commercial, postal, naval, nd military movements, are everywhere accelerated by the application f steam on water and land; and, to avoid dangerous and disgraceful elay in national progress, every country must make provisions in ome way to compete with this new element of national power.

In the Crimean war France and England availed themselves of team propulsion, and even constructed a railroad to the great advan-ge of the allies, and damage and disaster of Russia. Every country hould have means of railroad transportation to salient remote points, therwise ocean steamers can overwhelm such points before they can eceive succor from home.

In the recent Italian wars the adoption of steamboats and railroads s military facilities or auxiliaries concentrated more decisive action a three-months' campaign than could otherwise have been effected three years. Railroads are now absolutely necessary for military rotection, and might be justified in some instances on the ground public safety, and under the legal maxim: *Salus populi suprema t lex.*

Let us apply these general principles to the condition of California, nd the surrounding Pacific settlements. Our only effective com-ercial lines, connecting with those States, are circuitous, exterior, d oceanic, passing through foreign states by no means particu-ly friendly to us. The routes and sections of routes which lie on

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the ocean are exposed to superior naval powers in Europe—powers that are becoming vastly stronger by recent alliances, and by the application of modern improvements. The transits by the isthmus are exposed to international wars that are frequent in the unsettled condition of the Central American states.

In the event of probable wars among other nations, therefore, and what is worse, in case of war involving ourselves, all our lines of communication that could serve for commercial and military purposes would be immediately beyond our reach, and most likely occupied by others. Hostile powers could seize upon those lines transport an army by steam, and make a campaign in California before we could transport forces across the country to succor or sustain our friends and kindred of the Pacific shore.

A Pacific railroad is a military necessity to aid in the defence of the Pacific States; and every reflecting mind possessed of patriotic emotions will perceive that California wealth and weakness invite aggression, and demand of us immediate and decisive exertions in their behalf.

The Constitution has devolved upon Congress the power and the duty to "insure domestic tranquillity," to "provide for the common defence," to "regulate commerce with foreign nations and among the several States, and with the Indian tribes," and to "establish post offices and post roads." A railroad connexion with the Pacific would promote each and all these constitutional provisions; and every citizen desirous of maintaining the integrity of our Union, will find ample justification within some of these provisions to justify the national aid necessary to secure the actual result.

We have had conventions of the people, resolutions of States, the declarations of great political parties for years, presenting and pressing this matter upon Congress. Large sums have been appropriated and expended in preliminary explorations; large volumes have been written and published at the public expense; the President has repeatedly urged it upon Congress, and it may be regarded as a national determination that we must now take decisive action and secure successful results.

With this view of the subject, your committee have earnestly and anxiously sought a solution which would determine the magnitude of the requisite work, and the best means of accomplishing it.

Fortunately, the experience of our people in the construction of thirty thousand miles of railroad, has rendered the subject familiar to everybody, and the eighteen hundred or two thousand miles now required to connect our railroad system with the navigable waters of the Pacific, near San Francisco, is only perplexing because it passes through sparsely settled and somewhat barren portions of the republic, and because of the importance its construction will give to adjacent locations. The explorations which have been prosecuted with great ability by officers of the United States army, and the resumé by Captain Humphreys, in charge of these explorations, have furnished the careful student with ample means to determine some rational conclusion of this important subject.

A large map, drawn under the direction of Captain Humphreys and Lieutenant Warren, (a photographic miniature of which will accompany this report,) has also aided your committee in the determination of a great conflict of views relating to the length and position of routes. As a preliminary question, your committee first determined to adopt but one line, although many able arguments were urged in favor of two or more.

Having thus determined on one road, by reference to the map which presents the lines reported practicable, it will be perceived the subject is reduced to that of considering four routes, and selecting the best of these as the basis of our estimates. Able arguments have been presented in favor of each route, and each has its specialties, both favorable and unfavorable. On either route mountains, rivers, and sterile lands must be traversed; and on other parts of each route rich valleys, gentle grades, and cultivable lands are to be found. To present the favorable and unfavorable qualities of each route, would extend this report beyond reasonable limits; and your committee having resolved upon the presentation of the central route, without prejudice to others, they will present mainly the arguments favoring the construction of a railroad on that hypothesis.

The vast consequences to our country, and to the localities, which must result from the construction of a Pacific railroad, cause this question of route to be the most difficult and exciting obstacle in the determination of congressional action. Wherever the location be made, great advantages must inure to the vicinity, and therefore every section of the republic desires and earnestly insists on that line which will best subserve its local convenience.

Some not only desire the local advantage, but dread the prestige such a work will give to a rival section. It is impossible to fully reconcile this antagonism, by urging the importance of the common national interest; but your committee have sought to accommodate this, among other considerations, by adopting a central line, upon which branches on each side, and from each end, can most easily and directly accommodate all sections of our country.

The four general lines which have been reported as practicable, and so delineated on the accompanying map, are situated as follows:

1st. The route of the Gila river through Arizona, near the parallel of 32° north latitude. This route runs very near our southern boundary, and is the route of the so-called "Southern Pacific Railroad."

2d. The route through Albuquerque, near the 35th degree. This line also runs within four degrees of the southern boundary of the western portion of the republic.

3d. The emigrant route by the Platte valley, through Salt Lake valley, near the parallel of 41°, which we denominate the central line, the general location of which your committee have adopted.

4th. The route from St. Paul to Puget's Sound, which runs between the 47th and 49th degrees, very near to our northern boundary.

The section of our country through which all these lines run, lies mainly between the 31st and 49th degrees of north latitude, and is therefore eighteen degrees wide. The bisecting, or middle line, would be the 40th degree of latitude, which corresponds nearly with the boundary between Missouri and Iowa, a southern and nothern State. Without defining passes in the mountains, or prescribing the exact points of termini, your committee recommend this as the proximate parallel upon which centrality and the largest amount of local interest can be concentrated. It is central as to the west; central as to the numerous lines of railroads traversing the western States; central when prolonged eastward, as to our great cities, it being the parallel of Philadelphia, and central as it passes through the centre of our whole population.

All other things being equal on the plan of one road, such a location, your committee supposes, all would consider most likely to accommodate the greatest number of our people.

The shortest line.

Before stating the comparative length of different proposed routes, it is necessary to see that they start and end fairly. Radical error has been fastened upon the public mind by false presentation of the starting and ending of a Pacific railroad. Our railroad system is complete beyond the Mississippi river, and at many points lines are now progressing hundreds of miles west of the father of waters. At one point, St. Joseph, Missouri, this system of iron network has extended a line beyond the Missouri river, 250 miles west of the Mississippi, and rails are now being laid on the way to Fort Kearney. In considering a Pacific railroad, we should either start from permanent navigable rivers, or from these exterior points of the railroad system. This, all will concede, is the only fair way of comparing lines; yet such has not heretofore been the manner of starting comparative lengths.

In considering the western terminus, we must look to a safe, direct connexion with San Francisco, or to the navigable interior rivers, leading by steamboat directly to San Francisco. A terminus at San Diego or at Puget's Sound is, like the isthmus route, unsafe, being too far from the centre of the Pacific population, and too far from the great Pacific emporium, to which we should seek to have a safe communication in time of war. From either of these points to San Francisco, several hundred miles of ocean steam line is required. All lines should therefore be terminated at the bay of San Francisco, or what will be substantially the same, on the Sacramento or San Joaquin rivers, where steamers can always transport two hundred tons of freight, keeping the entire line interior, and therefore safe in time of war.

Taking this fair and only sensible way of starting and ending lines, to compare them, the relative length of these lines, taking distances from the map, which corresponds with the surveys, we have the following results:

1. The line of 32°, that of the southern Pacific railroad.

	Miles.
From Gaines to Fulton, tangent distance as shown on the map	150
From Fulton to San Francisco..........do..............do	2,024
	2,170
Deduct sections completed west of the Mississippi	27
	2,147
Deduct also navigable waters of the San Joaquin	97
Total length of southern line	2,050

2. The line of the 35th parallel.

From Memphis to Fort Smith	270
From Fort Smith to San Francisco	2,096
	2,366
Deduct finished section west of Memphis	32
	2,334
Deduct proposed cut-off	96
	2,238
Deduct also the navigable portion of the San Joaquin	97
Total length of this line	2,141

3. Platte valley or central route.

From Council Bluffs, on the Missouri, (nearly the same as St. Joseph's,) to San Francisco, according to the measurements shown on the same map	1,987
Add 50 miles to equate the starting point from St. Joseph, Missouri, where the railroad now terminates	50
	2,037
Deduct the navigable waters of the Sacramento, as stated by Lieutenant Abbot of the Topographical Engineers	265
Total length of the central line	1,772

4. The northern route, *via* St. Paul and Puget's Sound.

From St. Paul to Vancouver, as shown on the map	1,800
From Vancouver to Fort Reding on the Sacramento, by survey	508
Total length of northern line	2,308

From this comparison it will be seen the central route is only 1,772 miles long, measuring from the exterior point of the Hannibal and St. Joseph railroad to the navigable waters of the Sacramento. It will also be perceived that this central line is not only the shortest, but it is 278 miles shorter than the line of 32°; 369 miles shorter than the line of the 35th parallel, and 536 miles shorter than the northern line, thus proving the central route 278 miles shorter than the shortest rival route. A glance at the map will verify geometrically the relative lengths of the various routes, showing that the central line starts three degrees of latitude further west than either of the other proposed lines, and leading to the same point on a semi-diameter, it is shorter than all exterior lines. By adopting the central route, which is so much the shortest, much time and money will be saved to the United States.

Branch connexions.

The central position of this line makes the sum of the branches from the south and the north not only mathematically shorter than they otherwise would be, but it is especially convenient for branch lines, as they can follow the great river channels in approaching the main trunk. For instance, from Memphis, follow up the valley of White river; from Fort Smith, follow up the Neosho; from St. Paul, follow up the channel of the St. Peter's to the south bend of that river, and thence, via Sioux city, approach the main trunk. It will be seen that our river valleys make convenient approaches for railroad lines. But it is for Pacific branches that this line is especially convenient, and the only one that can accommodate branches to all the Pacific ports. A southern route would not accommodate Oregon and Washington. A northern would not accommodate Utah or southern California; but from the central line you can branch from the Salt Lake valley so as to accommodate all those western States and Territories.

This convenience of branches, especially to the Pacific ports, seems to conclude the argument in favor of the central route. To make a trunk line, inaccessible to Oregon and southern California, by reasonable branches, would be absurd, and accomplish only a fraction of the objects proposed. Puget's Sound is especially important in a military and commercial point of view, and our commencement of a railroad system should look to an early connexion with that growing and commanding point on the Pacific coast. The corresponding bay of great importance, in the southwest, is the Gulf of California, and although that inland sea does not belong to us, we must look with interest and favor on such honorable arrangements as will give our Pacific marine the benefit of such a harbor, and our railroad system early and easy connexion with it.

Practicability of a central route.

It would be folly to present only the bright spots in the long and mainly unsettled, uncultivable line of proposed route for a Pacific railroad, or to pretend the route is uniformly easy. There are bad and good, rich and barren, rough and smooth sections on each line. The best proof of the greater advantages existing on this central route is found in two facts:

1st. That nine-tenths of the overland emigration has adopted this route; and, 2d, the settlements are large and rapidly augmenting only on or very near this route.

[illegible] mines of Pike's Peak, the forty thousand Mormons, and the new and important Washo silver mines, will all be accommodated by a central route; and the latest news from these new mining districts is exciting a new flood of emigration unparalleled in former years.

But your committee will present the line as shown by the government surveys, this being the most reliable data upon which to base public legislation.

The official surveys on this route have been made by Colonel Frémont, Captain Stansbury, Lieutenant Beckwith, Colonel Lander, Lieutenant Bryant, and Lieutenant Warren, who, at different times, have examined the different sections; and by uniting their testimony a very correct idea may be formed of the entire route. The travel which passes through Missouri and Iowa concentrates on the Platte valley, which affords an easy approach to the Rocky mountains for all kinds of roads. Speaking of this first section, Lieutenant Warren says truly: "The Platte river is the most important tributary of the Missouri in the region under consideration; its broad and grass-covered valley, leading to the west, furnishes one of the best wagon-roads of its length in America. From its mouth to the forks, the bluffs are from two to five miles from the water, making an intermediate bottom valley of from four to eight miles wide. From the forks to Fort Laramie, the bluffs occasionally come down to the water's edge, and the road has to cross the points of the ridges. From Ash Hollow to Fort Laramie, the road is sometimes heavy with sand. Fine cotton-wood grows along the banks and on the islands, from the mouth to Fort Kearney; from here up it is scarce, and of small size. Cedar is found in the ravines of the bluffs, and in the neighborhood of the forks, and above. The river is about a mile wide, and flows on a sandy bottom. When the banks are full it is about six feet deep throughout, having a remarkably level bed; but it is of no use for navigation, as the bed is so broad that the water seldom attains sufficient depth, and then the rise is of short duration. The water is sometimes so low, as was the case last season, that it can be crossed anywhere without difficulty, the only care requisite being to avoid quicksands."

The settlements are now extended one hundred and fifty miles up the Platte, and following the South fork and Lodge-pole creek, as proposed by Captain Stansbury and Lieutenant Bryan, this testimony only relates to three hundred and seventy-three and a half miles, as Lieutenant Warren followed the North fork when he speaks of the road being "sometimes heavy with sand."

Lieutenant Bryan extended surveys up the South Platte and Lodgepole creek to the mountain passes. It is in this neighborhood (Cherry creek is fifty miles south) the new gold discoveries are made, and miners are gathering by thousands. According to Lieutenant Bryan, no serious difficulties occur in this section, except a scarcity of timber. He says, (volume 2, part 2, Executive Documents, 1857–'58, page 478:)

"From the Laramie crossing to the head of Lodge-pole creek the supply of good water is constant. The grass is generally short, as on all the uplands, though there are spots occasionally met with where a more liberal supply than usual may be had. From the head of Pole creek, over the west fork of Laramie river, to Bridger's pass, there is but one route to be followed; and, as it has already been described, I need not speak of it again here."

We suppose he refers to the report of Captain Stansbury. Large groves of pine and other timber have been discovered by the miners some thirty or forty miles south of Lodge-pole creek. The details of Lieutenant Bryan's report are favorable, but too lengthy. We refer to his detailed report.

From the head of Lodge-pole creek to Salt Lake City, we pass the Rocky and Wasatch ranges of mountains. We also pass the valley of Green river, where, for two hundred miles, at various places, coal is found in strata from two to ten feet thick.' Captain Stansbury explored this region, and we refer to his own work, from page 217 to page 273. On page 226, speaking of coal, he says:

"The out crop was about eight feet wide by four feet thick."

At another point, one hundred miles further east, he says, page 234:

"At a point thirteen miles from the mouth of Bitter creek we found a bed of bituminous coal cropping out of the north bluff of the valley with every indication of its being quite abundant."

On page 236, speaking of the portion three hundred and thirty-one miles further east, between a summit of the Rocky mountains and Salt lake, he says:

"We broke out from a bed twelve feet thick some beautiful specimens of excellent bituminous coal, which burned in our camp-fires with a clear, yellow flame."

At longitude 108°, latitude 41°, he says, page 236:

"Sandstone cliffs bound the valley on the north side, in which I observed a stratum of coal which was exposed for a hundred yards and was at least ten feet in thickness."

Having closed his survey of the route, he says, page 142:

"With the exception of the rough ground near the head of the Muddy, which offers no obstruction of consequence, a perfectly feasible, and indeed a most excellent route, whether for a wagon or railroad, has thus been traced, presenting fewer obstacles to the construction of either than almost any tract of the same length in the country. The grades will be easy, the bridging comparatively light, and with the exception of the crossing of the valley of the Muddy, where a long and heavy embankment may be required, the cutting and filling will be entirely within moderate limits. In no case will an inclined plane be required; and the route is more than usually free from the objection of high and narrow cañons, liable to be filled up or obstructed by snow during the winter."

Again, page 261, speaking of this whole, most remote, and difficult section:

"A glance at the map and a little attention to the table of latitudes will show that from Great Salt Lake City to the head of Lodge-pole creek, a distance of four hundred and eighty-four miles, the difference of latitude is but 35′ 42″; and while the greatest northing made by the proposed line is but little more than 20′ north of Lodge-pole creek, the greatest deviation to the south is but little more than three miles;

so that the entire route through that long distance varies but from a straight line."

And speaking of this route as preferable to going sixty mile ther north by the South Pass, he says, page 262 :

"A careful observation of the ground on both routes has ena me to form a general comparison between them, and has led to unhesitating conclusion that, in point of diminished distance, e grades, freedom from serious obstacles, and convenience and abunda supply of materials for construction, the line of this reconnoissan presents a trace for a road that is not only perfectly feasible but decidedl preferable to the other."

Lieutenant Beckwith corroborates this testimony (see volume 2, page 54, "Explorations and Surveys for a Railroad Route," &c.,) when he speaks of "the Green river basin, and the coal basin of Green river, from being abundantly supplied with that important article. It is more than two hundred miles in extent from east to west, and has a variable width, north and south, from twenty to over a hundred miles."

Speaking of snow in this region, about which much is said against a central route, and fearful in any country where houses are not yet constructed, he says:

"The trading post at Fort Bridger has been occupied constantly for the last ten years ; but the district was much frequented before by traders and trappers, whose effects are always transported by cattle, which subsist themselves throughout the year by grazing—a fact remarkably significant of the winter climate and depth of snow which falls in the district, the general elevation of which may be safely taken at seven thousand feet above the sea. And it is said by these people to be a well-established fact, that horned cattle, of which their stock largely consists, cannot so subsist when the snow is deep enough to bury their eyes and enter their ears as they feed."

Our troops spent the winter of 1857–'58 at Fort Bridger, and the miners have spent the two past winters in the Rocky mountains. They have not been seriously annoyed by snow ; and although the valleys are from 5,000 to 6,000 feet above the sea, the climate is comparatively mild. The Rocky Mountain "News," of the 14th ultimo, published at Denver City, says : "We have not had eight inches of snow this winter, and the grass now begins to grow, and the slopes look green." But railroad companies now overcome snow obstructions by the use of board fences to check drifts, and in the use of the snow-plough and running the engines to clear the track. Snow is no longer a railroad obstruction worthy of much consideration anywhere, and is no more in the arid regions of the Rocky mountains than in the eastern States of the same latitudes.

So much for the route to Salt Lake, to the Mormon settlement, where we have a population of at least forty thousand, and an army of two or three thousand, with which we must have constant communication. From Salt Lake City to the Nevada mountains, a section of about six hundred miles, we have the valley of the Salt Lake and Humboldt river, level or easily-graded plains. But the line is interrupted by the Humboldt mountains, which, however, are not difficult to pass. Scarcity of timber is the principal difficulty encountered.

Cedar is found in the Humboldt mountains, but in places ties may have to be transported from fifty to sixty miles. The description of this section, comprising the Mormon settlement and the Carson Valley settlement, is too well known to require much consideration. Its particular features are stated in the report of Lieutenant Beckwith, volume 2, pages 60 to 70, Explorations.

Captain Simpson, of the United States topographical engineers, has recently opened a shorter route, considerably south of the Humboldt, which is now travelled by the emigration, and was followed in the stage-coaches by Horace Greeley, esq., who considers it practicable for a railroad. This route is supplied with timber and water, and for these reasons may be found preferable to the Humboldt valley; but no *survey* has established the practicability of this line for a railroad, and your committee, therefore, retain the projection and distances as prescribed by Lieutenant Beckwith on the level plain of the Humboldt river. By either the Simpson route or Humboldt valley we arrive at the new silver mines of Nevada Territory, where agriculture and mining are attracting thousands, and building up a new Territory. This settlement is at the eastern base of the most precipitous and difficult mountain range, the Sierra Nevada. Carson river flows down this eastern slope, and sinks in the plain with the Humboldt river. Beyond the summit of this Nevada mountain Sacramento river flows down its western slope, and, passing Sacramento city, the capital of California, enters the Pacific at San Francisco. With silver on one side and gold on the other, the Sierra Nevada mountain is now, summer and winter, traversed by thousands; and the necessity of a railroad is, therefore, greatest where the difficulties are most formidable. Many new routes have been proposed, but your committee will present that which was surveyed and reported by the government employés.

In passing this mountain, you have to rise twelve hundred feet and descend twenty-four hundred feet. The rise is easy, and the descent is distributed over sixty-seven miles. On the summit of this mountain there is a level plain some thirty or forty miles in width. After what we have seen in passing the Alleghany mountains, there can be no doubt of the practicability of passing this mountain through the Madalin, Noble's, or Carson River Pass. Rather than go a great distance out of line to avoid such a mountain, we would adopt the improved inclined planes, which some insist are now the cheapest way to overcome elevations; or we may adopt the zigzag or Y *boyeau* construction that has occasionally been successfully used on the Baltimore and Ohio railroad.

But there is no need of such an expedient. The surveys of Captain Beckwith show the probability of passing the Nevada mountains by using grades that have been successfully tested. The most formidable obstacle in the route which he seems to prefer is two cañons, through which the Sacramento runs, and through which it is proposed to carry the railroad.

As this is the great obstacle, we give his description, and ask railroad men to consider it for themselves. After describing the easy ascent from the east to the broad, flat, timbered summit of the Nevada, and after proceeding with no serious difficulties to the decl plain, from whence he could overlook the vast valley of the Sacrame which leads to the Pacific ocean, he thus speaks of this cañon of Sacramento:

"This cañon is a formidable obstacle to overcome. Its entire leng is thirteen and seventy-four hundredths miles, surrounded by an ope valley of similar extent, which is followed by another cañon eight and ninety-five hundredths miles in length, of the same character as the first. The river, as it enters the first cañon, is from thirty to forty feet wide, flowing with a rapid current over a bed of rocks, and it is sixty feet wide as it enters the second cañon, just below the junction of Fall river, and flows over a similar bed with an equally swift current.

"At their heads, these cañons are vertical trachytic rocks, eighty feet high, with large masses of fallen rocks accumulated at the bases of the walls. The first is cut through a high plain for six miles; the plain then rises somewhat, and is surmounted by high, sloping rivers, rising five or six hundred feet above it, and the cañon becomes much broader, and its walls more elevated for two miles, to where it makes a large bend to the north; below this the walls gradually decrease, and in two miles the cañon opens to the width of half a mile, which it preserves for three miles to the succeeding valley. The highest portions of the walls rise two hundred feet above the stream, with an accumulation of fallen rocks extending halfway to the top. For eight miles the course of the cañon is direct. It then makes a long bend to the north, and is followed by two or three short curves, but with a generally direct course. Its open part is timbered, and its walls less abrupt; and on the right bank of the stream the mountains, followed by the river, extend considerably into the plain of Fall river. The most favorable line for the passage of a railway leads along the plain on the north side of the river, and descends the sides of the rocky hills which surmount it, and continues on the side of the mountain until it enters the plain of Fall river. The second cañon is only less formidable than the first because it is of less extent."

It will be perceived the river is small—from twenty to sixty feet wide. The cañon is straight, or has long curves. Loose piles of rock lay alongside of the stream, and we do not perceive why these loose piles of rock may not be distributed partly in the stream and partly out of it, and with the aid of side cuts follow near the bed of the stream, instead of the side of the mountain.

Be this as it may, Lieutenant Beckwith has not only carefully described these two gorges, which, taken together, only extend over 22.69 miles, but he shows how they may be overcome or avoided. After reading his report any practical railroad constructor will be convinced of the practicability, and, in some respects, interesting portions, of the railroad route.

The survey of Lieutenant Beckwith terminates at Fort Randall, on the Sacramento, where the river is navigable for small craft, and the valley affords an easy descent for a railroad to the bay of San Francisco. Having finished his review of his labors on this central route, he concludes his report as follows:

"Further surveys on this route would, doubtless, develope important improvements at various points, and at two, at least—one from the shore of the lake near Stansbury's island, by Pilot Peak, to the pass in the Humboldt mountains, and the other in crossing from Humboldt river to Mud lake—would probably diminish the length of the line by one hundred and six miles. The grades, also, are doubtless susceptible of material improvement by minute surveys with the spirit-level. There is an abundance of good stone for bridges and building purposes, at short intervals, upon all parts of this line. Water is also found in abundance for railroad purposes throughout those portions of the Sierra Nevada, Wasatch, and Rocky mountains explored, and also at a few miles intervals in the basin, where it usually occurs in springs at the bases of the mountains, and in small streams descending from the higher peaks and ridges to the adjacent plains.

"And a simple reference to the map of the route will exhibit an important feature in the facts that, in its remarkably direct course, for its great length, from the Missouri west to the Pacific, it follows the ascending and descending valleys of permanent rivers and their tributaries for more than two-thirds of its entire length, and that water is abundant on all the intermediate spaces, affording the means of irrigation to a large extent wherever the lands are suitable for it; and that they will doubtless be found so wherever the sage plains are luxuriant, may be inferred from the rich aromatic odor and resinous properties of that plant, and from the exceedingly nutritious character of the grass scattered through it. And it is a well-known fact that the Mormons produce some of their first crops from reclaimed sage plains.

"By reference to the map and accompanying tables of latitudes, it will be seen that the route explored conforms throughout to a remarkably straight line, deviating west from Fort Bridger only at the Timpanagos cañon, if that line be preferred to the Weber, and on the northern portion of the Sacramento river."

The Secretary of War, Hon. Jefferson Davis, in his summary report of 1855, although he favors the southern route, thus speaks of this central, after he had reviewed the surveys concluded by Lieutenant Beckwith:

"Although the route passes over elevated regions, the sum of ascents and descents is the next least after that of the forty-seventh parallel, which is to be attributed to the table-land character of the mountain districts. It partakes of the character of the route near the forty-seventh parallel in the long and severe winters on the plains east of the Rocky mountains and westward to the Great Basin.

"The cost, as estimated in the office, from Council Bluffs to Benicia, a distance of 2,031 miles, is $116,095,000.

"The statistics of the route will be found in the table appended.

"The survey of the western portion of this route by Lieutenant Beckwith has resulted in the discovery of a more direct and practicable route than was believed to exist from the Great Salt Lake to the valley of the Sacramento. Since his report was made, a brief communication from Brevet Lieutenant Colonel Steptoe, commanding the troops in Utah, has announced the discovery of a still more direct route from Great Salt Lake to San Francisco. The new portion of this route passes to the south of Humboldt or Mary's river, and, entirely avoiding the difficulties experienced by travellers along that stream, proceeds to the valley of Carson river, being well supplied with water and grass.

"From Carson river it crosses the Sierra Nevada by the passes at the head of that river, and descends to the valley of the Sacramento, being practicable throughout for wagons.

"In the absence of instrumental surveys affording data for the construction of profiles, no opinion can be formed as to the practicability of this route for a railroad. Should it be found practicable, however, it will lessen the length of the route of the forty-first parallel, and still further diminish its difficulties, already known to be less than on any other route except that of the thirty-second parallel."

The route here mentioned south of the Humboldt corresponds mainly with that to which we referred as "Simpson's route." It is the route now travelled, and may, as the honorable Secretary says, be adopted for the railroad, thereby still further diminishing the length of this central route.

Although your committee would avoid a comparison of routes in regard to the topographical features of each, they would not have it inferred that they regard the obstacles on this central route as any more formidable than those found on each of the other routes. All the surveys have been made with barometrical observations to ascertain heights, and stations have been erected from ten to twenty miles apart. These observations are sufficient to determine the general features of the country, and furnish sufficient information for practical men to judge of the practicability of the routes.

Without more minute surveys, comparative grades, curves, and cost cannot be determined with such accuracy as to make comparisons safe; and your committee has therefore only spoken of comparative *length* and *position*, which are based upon more certain and satisfactory data.

Cost of construction.

The practical difficulty which is presented in estimating the cost of a Pacific railroad, is the unsettled and comparatively uncultivable portions of the country beyond the 100th degree of longitude. Although the country is not generally arable, the valleys of the streams are cultivable; and most of the other portions are good grazing lands, affording pastures for numerous herds of buffalo, antelope, mountain sheep, and, where settlements exist, horses and cattle. Settlements and improvements are rapidly progressing on the central route, and what now seems a desert waste will be inhabited in advance of the progressing railroad. Yet it will be necessary to look elsewhere for the men, and most of their supplies, during the construction of the road. The central route, fortunately, is most accessible to men and provisions, and the greater settlements along the line, and especially the Mormons, in Utah, would furnish laborers, provisions, and other advantages to aid the progress of the work.

There are four general items in the cost of a railroad. These are the *roadbed*, the *ties*, the *iron*, and the *rolling stock*. Iron and rolling stock following the constructed road would cost very little more than on other western roads. The extra cost would mainly relate to the other two items, roadbed and ties. The grade is very easy on a great portion of the central route, as the Platte valley, Salt Lake valley, and the Humboldt valley are extremely smooth and level. All the rivers can be easily bridged; the country is healthy; the climate is neither very hot nor very cold; miners are busy on all sides of it in search for gold and silver; and the moving emigration on this route, together with the mails already established, will all help to relieve it of a portion of the loneliness and desolation which exists on all the overland routes. By adopting a temporary grade, which can be improved afterwards, the track-laying may commence at each end and proceed with great activity towards the mountains, where men in advance should prepare the more difficult passes. It is not within the province of your committee to present items of estimates, but by thus showing that the extra cost mainly relates to the grade and ties, they cannot perceive how it is possible for such a road to cost a vast deal more per mile than other railroads. The cost of western roads does not exceed forty thousand dollars a mile, and some are built for much less. Add, if you please, twenty thousand dollars a mile for extra cost of grading and procuring ties on a Pacific road, and you have a total of sixty thousand dollars a mile. If you start with two converging branches, which are to unite within two hundred miles from the Missouri, the entire length of line, including the branches, would be, say, two thousand miles, and the entire cost one hundred and twenty millions of dollars. Looking at the valley of the Platte, sixty thousand dollars a mile would appear enormous; while looking at the mountain passes of the Wasatch and Sierra Nevada, it would appear too small. As the easy portion far exceeds the mountainous and rough portions, your committee believe this sum a safe approximate estimate of the entire cost of the road.

Probable results.

A railroad once made, connecting the Atlantic and Pacific, through a healthy inhabited portion of this continent, will sensibly affect the commerce, travel, and social intercourse of the world. Europe and Asia will be brought in effect much nearer to each other, and we will be much nearer to Asia. Travelling lines will not only be shortened, but they will be much more speedy, healthy, and inviting, by interposing the variety of land scenery for the dangers and monotony of the sea. It is not possible for your committee to make any estimate of pecuniary results which will grow out of such a stimulant to exterior commerce; but they are confident such a line of communication will be largely augmented by new elements of foreign intercommunication.

Results within our own country are more easily approximated. The travel across the continent will go by the railroad. You can now go from any of our cities to St. Joseph, Missouri, by railroad for thirty-five dollars. The remaining—say two thousand miles to San Francisco, at three cents per mile—nearly double the rates on this side—would be sixty dollars; add for meals and extras, ten dollars; total from eastern cities, by railroad, to San Francisco, one hundred and five dollars. A passage by any of our *foreign* routes costs near two hundred dollars. By railroad you could go in six or eight days. It would be much *cheaper*, *quicker*, and *safer* for passengers travelling from ocean to ocean, and they will all take the railroad route. This demonstration is irresistible and incontrovertible. If the extremes would choose this route intermediate or way travel between the cities on the Atlantic and the Pacific would *a fortiori* adopt this route. There is, as all know, a creative power in a railroad which will double or treble the present California travel. There would then be at least one hundred thousand passengers pass one way, or two hundred thousand trips per annum. These, at sixty dollars each, for the section west of the Missouri line, amounts to the sum of...... $12,000,000 00

All the gold would be transported by rail, and pay three per cent. on fifty millions......................	1,500,000 00
The mails at prices heretofore exceeded by land and ocean..	1,500,000 00
Transportations of men and munitions of war, same as it now costs for way and through transportations.	5,000,000 00
Total...	20,000,000 00

Freight will divide; some will go round by water, but a very large portion will go by rail. The distance from Boston to St. Joseph is nearly as great as it is from St. Joseph to San Francisco. It is obvious, therefore, that freight transported between the Mississippi valley and San Francisco would not go or come by our eastern cities, but it would travel direct across by rail. Where the distance to San Francisco by rail is 2,000 miles, (say from Missouri and Iowa,) at two cents per ton per mile, freights to and from San Francisco would be as follows:

A ton..	$40 00
One hundred pounds..	2 00
One pound...	2
Bushel of grain, 60 lbs...	1 20
Barrel of flour...	4 00
Barrel of pork..	6 00
A cow, 1,000 lbs..	20 00
Box of dry goods, 300 lbs...	6 00

To determine the cost from ocean to ocean, it is sufficient to add 50 per cent. to these figures.

An inspection of these prices will furnish some means of judging what will go by rail and what will travel by ocean.

The *interest, risk, insurance, and transportation* by water will average, say, five per cent. The first three items being much greater by water than by rail, valuable light goods will go cheapest by rail, while cheap heavy goods will go cheapest by water.

A package worth one dollar, weighing less than one pound, would go from New York to San Francisco by rail; as the freight, three cents, added to risk, insurance, and interest, would probably be less than five cents, the sum of these items by water. *Therefore everything worth a dollar a pound would go by rail.*

A dollar's worth of cloth, silk, gold, silver, notions, many articles of merchandise, will weigh less than a pound, and therefore go from New York and San Francisco through by railroad. Besides the difference between ten days' returns and ninety days is of so much importance to mercantile operations, a much greater share would go by rail. In fact, we are told that over three hundred tons are annually forwarded now by one express company, at from 20 to 30 cents a pound, requiring, as now conveyed, from 25 to 30 days. How much more, then, would go, at three or four cents a pound, if conveyed in ten or twelve days? Certainly ten or twenty times as much. Without much doubt, therefore, the through and way freight, and the way passengers on the Pacific railroad, would not be less than ten millions a year, which, added to the sum before stated, makes the gross proximate income per annum $30,000,000.

This sum is sufficient to pay current expenses, and also a fair dividend on the estimated cost, $120,000,000.

If it be said the items which are here enumerated are overestimated, it may be replied, that before the road can be completed another decade of our history will have transpired, and western progress will more than compensate for possible errors.

Besides, this estimate makes no account of new elements of business that will be created by a new channel of commerce so important to other nations of the world, and so sure to develop new industrial pursuits in our own country. This creative power of railroads has never been overestimated, and the only mistake railroad men have made in the productive results of their investments has grown out of the multiplicity of rival roads, and the consequent reduction of prices. A Pacific railroad is not liable to competition, for if others are made, they will be too remote to compete for local business, and they will not be undertaken for the through business until it has been clearly demonstrated there is enough to well compensate two or more roads.

The plan of execution.

Your committee have found the greatest diversity of opinion as to the mode of accomplishing the object, and for years the inventive genius of men has been directed to schemes for constructing a Pacific railroad. It is generally conceded that government must, in some way, encourage the work, to induce private capital to take hold of it. After much consideration, your committee have adopted the plan of advancing government 30 year bonds, bearing 5 per cent. interest, in payment for telegraph and transportation service, which is to be executed during the progress and after the completion of the work. To secure the government, they are to be advanced only as sections of fifty miles are completed, beginning at each end with what is supposed to be only enough to aid capital; the amount per mile is to increase as the work proceeds from both ends towards the centre of the line, where the expense will be greatest. As a further security, these advances are to be a first mortgage lien on the road and equipment;

so the effect is an advance of government credit for thirty years on what would seem to be ample security. We have stated the annual service now required by the government (which could and would be far better performed by a railroad) at five millions of army and navy transports, and one and a half million of postal service, which, together, amounts to six and a half millions. It is proposed to advance, as the work progresses, sixty millions in bonds, which may be increased by accruing interest over service as the work proceeds to seventy millions; the annual interest would then be $3,500,000. The annual service, as above stated, $6,500,000; so the annual service would exceed the annual interest $3,000,000.

This last sum would remain with the government as a sinking fund sufficient to extinguish the bonds in less than twenty-four years, and therefore *before the bonds will become due.*

If it be said the railroad will furnish transportation at much cheaper rates than now paid, still the saving is no less to the government, and the increase in quantity of public transportations will probably more than compensate for the reduction of prices. Besides, the service as the work proceeds will keep down a large portion of the interest named, especially when it is apparent the bonds will not all be advanced till the work is all done.

It remains to be shown whether the sixty millions required from private capital will be well invested.

Take from the estimated gross income per annum, the service, as before stated, $6,500,000, and there remains $23,500,000 as the annual receipts to pay current repairs, expenses, taxes, and dividends.

Engineers have determined the net cost of running a train to be about one dollar a mile. There are many items besides fuel that make up the cost, but that being the principal item, and fuel being scarce on the road, we will put this cost at three dollars a mile. Three through trains a day each way will do all the business here contemplated. The daily cost would then be eighteen dollars a mile per day, and on two thousand miles, the estimated length of the Pacific railroad, $36,000 a day, and for a year $12,960,000 for running three trains from each end each day. Take this from $23,500,000 and there remains $10,540,000 to pay repairs, taxes, supervision, and dividends. For repairs, taxes, and supervision, say, one thousand dollars a mile, $2,000,000, and there remains $8,540,000, which is twelve per cent. per annum on the sum of $70,000,000, to which the sixty millions *may possibly* swell by interest during the completion of the work.

Your committee have thus presented the nature of the work, the probable cost, and a mode by which government aid and private capital may unite in the accomplishment of the Pacific railroad. It may differ from the views of many, and may not be the best mode of accomplishing the object. Your committee have tried to adapt the plan to the nature of our government and the public will. The sum required from government (sixty millions) seems large, but it is only to be advanced in yearly instalments, and then in bonds which are secured by a first mortgage on the road. The Mexican war cost us two hundred millions, and we never felt the payment. The construction of a Pacific railroad will accomplish more good, and add more to our national glory; and we would therefore be justified by posterity if we *sunk* double the $60,000,000 we have estimated as the cost of the national achievement. The ancient roads of Peru and the "Appian Way" of Rome are monuments of national power worthy of an ancient civilization. A Pacific railroad is consistent with the intercourse and intelligence of our people, in harmony with the progress of the age, and worthy of a great and powerful nation.

It will unite isolated sections of our own country, create a direct communication between Europe and Asia, and revolutionize the commerce and elevate the civilization of the world.

Your committee having thus presented the matter submitted to their consideration, have prepared a bill designed to furnish the requisite legislation to accomplish the object, which they present with a recommendation that it do pass.

SAMUEL R. CURTIS.
F. W. KELLOGG.
R. E. FENTON.
CHAS. L. SCOTT.
ALEX. H. RICE.
SAMUEL S. BLAIR.
E. B. FRENCH.

I concur in the conclusions of the foregoing.

J. F. FARNSWORTH.

I am in favor of a route, in connexion with this, leading to the Columbia river; but as the committee decide against that, I endorse the recommendation of the committee in favor of the central route.

LANSING STOUT.

I concur in the above report except the plan of construction.

H. WINTER DAVIS.

APPENDIX.

In the first volume of the Railroad Surveys you will find a table which was made out with a view of showing comparative routes. Distances and elevations are taken from measurements, and are therefore reliable; but estimates of cost are mainly hypothecated on a supposed resemblance to roads elsewhere. But the starting points relate to the points where the *surveys* commenced, not where the *railroads* would commence. You must therefore add to the southern lines and deduct from the central line, as the committee have explained, before comparisons are made.—(See next page.)

A.—*Table showing the lengths, sums of ascents and descents, equated lengths, cost, &c., of the several routes explored for a railroad from the Mississippi to the Pacific.* (For the grades see the profiles accompanying the report.)

	Distance in straight line.	Distance by proposed railroad route.	Sum of ascents and descents.	Length of level route of equal working expense.	Comparative cost of different routes.	Number of miles of route through arable land.	Sterile region.		No. of miles at an elevation above 0, and less than 1,000 feet.	No. of miles at an elevation greater than 1,000 and less than 2,000 feet.	2,000 and 3,000.	3,000 and 4,000.	4,000 and 5,000.	5,000 and 6,000.	6,000 and 7,000.	7,000 and 8,000.	8,000 and 9,000.	9,000 and 10,000.	Summit of the highest pass on the route.	
							No. miles of route through lands generally uncultivable, arable soil being found in small areas.	No. of square miles of sums of areas of largest bodies of arable land in uncultivable region.												
	Miles.	*Miles.*	*Feet.*	*Miles.*															*Feet.*	
Route near 47th and 49th parallels, from St. Paul to Vancouver.	1,445	1,864	18,100	2,207	*$130,781,000	374	1,490	‖1,000	470	580	720	130	97	28	....	....	....	....	6,044	Tunnel at elevation of 5,219 ft.
Extension thence to Seattle..........	......	161	1,600	180	*10,090,000	161	....	....	161											
Route near the 41st and 42d parallels, via South Pass, from Council Bluffs to Benicia.	1,410	2,032	29,120	2,583	116,095,000	632	1,400	‖1,100	180	170	210	160	580	285	270	107	20	....	8,373	
Route near the 38th and 39th parallels, from Westport to San Francisco, by the Coo-che-to-pa and Tah-ee-chay-pah Passes.†	1,740	2,080	49,986	3,125	Cost so great that the road is impracticable.	620	1,460	‖1,100	340	276	165	348	466	170	60	155	80	20	10,032	Tunnel at elevation of 9,540 ft.
The same, from Westport to San Francisco by the Coo-che-to-pa and Madelin Passes.	1,740	2,290	56,514	3,360	.....do.......	670	1,620	1,100	275	308	190	143	725	284	110	155	80	20	10,032	Tunnel at elevation of 9,540 ft.
Route near the 35th parallel, from Ft. Smith to San Pedro.	1,360	1,892	48,812	2,816	‡169,210,265	416	1,476	2,300	305	347	260	185	160	305	235	95	....	....	7,472	
Branch road to San Francisco, from the Mohave river.	......	406	7,500	506	19,935,000	322	84	....	290	10	72	35								
Route near the 32d parallel, from Fulton to San Pedro.	1,400	1,618	32,784	2,239	68,970,000	408	1,210	2,300	485	300	100	170	503	60	....	....	....	....	5,717	
Extension to San Francisco..........	......	440	10,150	632	25,100,000	376	70	....	290	50	65	35								

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* These are the estimates of the office, those of Gov. Stevens having been brought to the same standard of increased cost as the other routes, and his equipment reduced to that of the other routes. His estimates were $117,121,000 and $7,030,000.

† Supposing the route to be a straight line, with uniform descent from the Un-kuk-oo-ap mountains (near Sevier river) to the entrance of the Tah-ee-chay-pah Pass, the most favorable supposition.

‡ This estimate for the route near the 35th parallel is thought to be largely in excess.

‖ These sums do not include the areas of cultivable soil as far west as the Cascade and Sierra Nevada mountains.

The sum of the minor undulations (not included in the sum of ascents and descents here given) will probably be greater for the route of the 47th parallel than for the other routes; that for the route near the 32d parallel will probably be the least of all.

With the amount of work estimated for the roads in this report, the equated lengths corresponding to the sum of ascents and descents has but little practical value. With a full equipment and heavy freight business, the sum of ascents and descents becomes important. A comparison of the degree of curvature of the routes cannot be made.

The central route from Council Bluffs to Benicia lies between 26 degrees of longitude which at that parallel are about 50.20 miles long. There seems, therefore, to be a clerical error in the "distance in straight line," as shown in this table "A," which would be about 1,310 instead of 1,410 miles. The summit of the highest pass relates properly to Chayenne Pass; but if we go by the South Pass it would be 7,220 instead of 8,373 feet.

In the fifth volume of the Surveys, Captain Humphrey, the able and distinguished officer in charge of the surveys, has materially changed the figures as to cost, &c., on other lines; but no change appears to be made on the central. As these estimates of cost and *equated* distances are made on a mere reconnoissance, and profiles erected on barometrical observations twenty and thirty miles apart, engineers will perceive the convenient change of hypothesis that would change the estimate on the 35th parallel from $169,210,265 to the round sum of $106,000,000.

But other matters in these tables are interesting, and we here present the second edition of this table.—(See vol. VII, Explorations, Appendix, p. 37.)

Table showing the lengths, sums of ascents and descents, equated lengths, cost &c., of the several routes explored for a railroad from the Mississippi to the Pacific.

	Distance by air line.	Distance by proposed railroad route.	Sums of ascents and descents.	Length of level route of equal working expense.	Comparative cost of different routes.	No. of miles of route through arable land.	No. of miles of route through land generally uncultivable, arable soil being found in small areas.	Number of miles at an elevation above the sea between—										Altitude above the sea of the highest point on the route.	
								0 and 1,000 feet.	1,000 and 2,000 feet.	2,000 and 3,000 feet.	3,000 and 4,000 feet.	4,000 and 5,000 feet.	5,000 and 6,000 feet.	6,000 and 7,000 feet.	7,000 and 8,000 feet.	8,000 and 9,000 feet.	9,000 and 10,000 feet.		
	Miles.	*Miles.*	*Feet.*	*Miles.*														*Feet.*	
Route near forty-first and forty-second parallels, from Council Bluffs, via South Pass, to Benicia	1,410	2,032	29,120	2,583	$116,095,000	632	1,400	220	170	210	160	590	285	270	107	20	....	8,373	
* Route near thirty-eighth and thirty-ninth parallels, from Westport, via Coo-che-to-pa and Tah-ee-chay-pah Passes, to San Francisco	1,740	2,080	49,985	3,026	Impracticable.	620	1,460	340	276	165	348	466	170	60	155	80	20	10,032	Tunnel at elevation of 9,540 feet.
Route near thirty-eighth & thirty-ninth parallels, from Westport, via Coo-che-to-pa and Madelin Passes, to Benicia.	1,740	2,290	56,514	3,360	Impracticable.	670	1,620	275	308	190	143	725	284	110	155	80	20	10,032	Tunnel at elevation of 9,540 feet.
Route near thirty-fifth parallel, from Fort Smith to San Francisco	1,550	2,096	48,521	3,015	106,000,000	646	1,450	585	290	261	236	181	295	222	26	....	....	7,550	
Route near thirty-fifth parallel, from Fort Smith to San Pedro	1,360	1,820	48,862	2,745	92,000,000	420	1,400	354	292	236	210	185	295	222	26	....	....	7,550	Tunnel at elevation of 4,179 feet.
Route near thirty-second parallel, from Fulton to San Francisco, by coast route	1,630	2,024	38,200	2,747	†90,000,000	834	1,190	893	347	120	342	271	50	....	....	....	....	5,717	
Route near thirty-second parallel, from Fulton to San Pedro	1,400	1,598	30,181	2,169	68,000,000	408	1,190	478	337	120	342	271	50	....	....	....	....	5,717	
Route near thirty-second parallel, from Fulton to San Diego	1,360	1,533	33,454	2,167	‡68,000,000	374	1,159	420	305	125	362	271	50	....	....	....	....	5,717	

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* Supposing the route to be a straight line, with uniform descent, from the Un-kuk-oo-ap mountains (near Sevier river) to the entrance of the Tah-ee-chay-pah Pass—the most favorable supposition possible.

† The estimate of Lieutenant Parke for the construction of a railroad by this route, from Fulton to San José, is $62,812,750. Adding $2,025,000, the office estimate for the route from San José to San Francisco, Lieutenant Parke's total estimate from Fulton to San Francisco would be $64,837,750.

‡ The estimate of Lieutenant Parke for this route is $59,005,500.

The sum of the minor undulations (not included in the sum of ascents and descents here given) will probably be greater for the routes near the 47th and 49th parallels than for the other routes.

With the amount of work estimated for the roads in this report, the equated lengths, corresponding to the sums of ascents and descents, have but little practical value. With a full equipment and heavy freight business, the sum of ascents and descents becomes important.

Surveys have been continued on the southern lines, and upon these changes were made in this amended table. It is reasonable to suppose further surveys on the central route would have caused similar improvements in the line, and hence the fairness of presenting both these tables.

Another table, found in the first volume Explorations, page 32, which has been used to show distances from the points where *surveys* commenced to navigable rivers and to eastern cities. This table does not profess to be perfectly accurate; but, on examination, some use may be made of it in studying the relative length of future lines of railroad. Distances seem to have been taken from railroads then "built, building, and *projected*." The projected lines had not then all been measured, and looking at the map accompanying this report it will be seen how and where these distances are "projected." The map being made under the supervision of the same officer, Captain Humphrey, illustrates these tables geometrically, and affords to the careful student an opportunity of making corrections where surveys and railroads have been made since the tables were first made in 1855.

"B."

Distances of the eastern termini of the several Pacific railroad routes to the Mississippi river, Boston, New York, Charleston, and New Orleans, by railroads built, building, and projected, as measured on the "railroad maps."

		Miles.
1.	St. Paul to Boston	1,316
	St. Paul to New York	1,190
	St. Paul to Charleston	1,193
	St. Paul to New Orleans	1,198
	Aggregate	4,897
2.	Council Bluffs to Rock Island, (Mississippi river)	267
	Council Bluffs to Boston	1,374
	Council Bluffs to New York	1,252
	Council Bluffs to Charleston	1,195
	Council Bluffs to New Orleans	1,075
	Aggregate	5,163
3.	Westport, mouth of Kansas, (near Fort Leavenworth,) to St. Louis, (Mississippi river)	245
	Westport to Boston	1,415
	Westport to New York	1,220
	Westport to Charleston	1,045
	Westport to New Orleans	875
	Aggregate	4,800

	Miles.
4. Fort Smith, on the Arkansas, to Memphis, (Mississippi river)	270
Fort Smith to Boston	1,540
Fort Smith to New York	1,345
Fort Smith to Charleston	960
Fort Smith to New Orleans	655
Aggregate	4,770
5. Fulton to Gaines, (Mississippi river)	150
Fulton to Boston	1,530
Fulton to New York	1,335
Fulton to Charleston	950
Fulton to New Orleans	402
Aggregate	4,367

From this table "B" it will be seen that the distance from New York to San Francisco is the shortest by the central route.

	Miles.	Miles.
1. From New York to St. Paul, (see table "B,")	1,190	
From St. Paul to Vancouver, (table "A,")	1,864	
From Vancouver to Benicia, (the bay of San Francisco,) estimated, say	700	
		3,754
2. New York to Council Bluffs, (see table "B,")	1,252	
From Council Bluffs to Benicia, (bay of San Francisco,) (table "A,")	2,032	
		3,284
3. From New York to Fort Smith, (table "B,")	1,345	
From Fort Smith to San Pedro, (table "A,")	1,892	
From San Pedro to San Francisco, (table "A,")	406	
		3,643
4. From New York to Fulton, (this is the Texas route,) (table "B,")	1,335	
From Fulton to San Pedro, ("A,")	1,618	
From San Pedro to San Francisco, (table "A,")	440	
		3,393

It is strange that in the face of these tables the impression should have gone out that the Texas route is the shortest.

Some corrections have been made by subsequent surveys, but the shortening by Simpson's and other surveys on the central route renders it probable that the corrections would be much more favorable to the central route.

In considering the matter of a Pacific railroad *now* we cannot, however, overlook the fact that our railroad system has at some points advanced several hundred miles further west on the central route, and thus the remainder to be constructed, as shown in the report of the committee, makes the central route to the *centre of the Pacific settlement* about three hundred miles the shortest.

OCEAN ROUTES.

The present routes to California and Oregon, whether by the Isthmus or Cape Horn, are not only thousands of miles round, but they are journeys by water. Land transportation and travel are every day advancing by new inventions, and everybody seems to prefer land even when water lines are of equal length. Railroads along the lake shore and Hudson river are crowded with business. How much more, then, would a route by rail direct to San Francisco compete with present circuitous water routes to the same place.

The Isthmus routes also carry everything through sultry, sickly climates, where property is damaged, and many articles ruined; and where disease has fastened upon thousands, and carried them away to untimely graves.

But everywhere the ocean is a solitude and sepulchre that all should shun who seek security and comfort in their commercial pursuits. Thousands are lost, "buried in the sea," and millions of treasure has been scattered over the fathomless bed of the ocean. The following summary of disasters, compiled and published in a speech of the Hon. Charles L. Scott, on the "steamboat passenger bill," in 1858, is a graphic picture of accidents on water which should serve as an argument in favor of railroad and land travel everywhere:

List of steamers lost within the last five years.

Name of steamer.		When lost.	Value of vessel and cargo.	No. of lives lost.
President, (*a*)	British		$1,200,000	130
Arctic, (*b*)	American		1,800,000	300
Pacific, (*a*)	do		2,000,000	240
San Francisco, (*b*)	do		400,000	160
Central America, (*b*)	do		2,500,000	387
Union, (*c*)	do	July, 1851	300,000	None.
Chesapeake, (*c*)	do	Oct., 1851	50,000	None.
Sea Gull, (*c*)	do	Jan, 1851	50,000	None.
Commodore Preble, (*c*)	do	May, 1851	50,000	None.
General Warren, (*c*)	do	Jan., 1852	50,000	None.
North America, (*c*)	do	Feb., 1852	150,000	None.
Pioneer, (*c*)	do	Aug., 1852	250,000	None.
Independence, (*e*)	do	do	100,000	140
City of Pittsburg, (*d*)	do	Oct., 1852	300,000	None.
Tennessee, (*e*)	do	March, 1853	300,000	None.
J. S. Lewis, (*e*)	do	April, 1853	150,000	None.
Washington, (*e*)	do	do	40,000	None.
Southerner, (*e*)	do		30,000	None.
Yankee Blade, (*f*)	do	Nov., 1854	280,000	75
Humboldt, (*f*)	do		1,600,000	None.
Franklin, (*f*)	do		1,900,000	None.
City of Glasgow, (*a*)	British		850,000	420
City of Philadelphia, (*f*)	do	Sept., 1854	600,000	None.
Her Majesty, (*a*)	do	do	250,000	80
Opolousas, (*g*)	American		125,000	30
Rhode Island, (*a*)	do		100,000	60
North Carolina, (*g*)	do		100,000	15
Winfield Scott, (*c*)	do		350,000	None.
Tempest, (*a*)	British		300,000	150
Lyonnais, (*g*)	French		280,000	160
Albatross, (*h*)	American		120,000	None.
Cherokee, (*i*)	do		450,000	None.
Knoxville, (*j*)	do		150,000	None.
Canadian, (*k*)	British		400,000	None.
Crescent City, (*f*)	American		180,000	None.
			17,750,000	2,307

(*a*) Never heard from.
(*b*) Foundered.
(*c*) Wrecked on coast of California.
(*d*) Burned at Valparaiso.
(*e*) Lost on the Pacific coast.
(*f*) Wrecked.
(*g*) Collision.
(*h*) Lost near Vera Cruz.
(*i*) Burned in the harbor.
(*j*) Burned in the harbor of New York.
(*k*) Wrecked in the St. Lawrence.

Losses on the lakes.

1854, steam vessels, valued at	$2,187,825	Lives lost	119
1855 do do	1,692,700	Do	118
1856 do do	1,378,100	Do	407
	5,258,625		644

On the western rivers for one year, from 1852 *to* 1853.

78 steamboats, 4 barges, 73 coal boats, 32 salt boats, on board of which 400 lives were lost.

RECAPITULATION.

Value of property.

Lost on steamers on the ocean	$17,750,000
Lost on the lakes	5,258,625
	23,008,625

Number of lives lost.

Lost on the ocean	2,307
Lost on the lakes	644
Lost on western rivers	400
	3,351

Add to this the Austria, a fire at sea and great loss of life, the wreck of the Flying Cloud, and many more recent and fearful accounts of disaster which crowd upon the memory and swell the fearful aggregates of human sacrifice to ocean service.

WESTERN TERMINUS.

The centre of California population is probably north of Sacramento. Hence, for all purposes of securing railroad connexion with the centre of the Pacific population, and also securing convenient commercial connexion with San Francisco, it is sufficient for a central Pacific railroad to run to the navigable waters of the Sacramento. On this subject Lieutenant Abbot, of the Topographical Engineers, says of that river:

"*Navigation of Sacramento river, California.*

"Boats of about four hundred tons burden, (register two hundred tons,) ply regularly from San Francisco to Sacramento, a distance variously estimated from one hundred to one hundred and thirty miles by water.

"Between San Francisco to Lone Tree House boats of about two hundred tons ply regularly. The distance by water is not known to me, but it is about one hundred and twenty-five miles. At Lone Tree House there are some slight rapids.

"From Lone Tree House to Red Bluffs, (the head of steamboat navigation,) boats of about one hundred tons burden are used. The river is here somewhat obstructed by snags and very short bends. The distance is approximately sixty miles by water.

"HENRY L. ABBOT,
"*1st Lieutenant Topographical Engineers.*

"Capt. A. A. Humphrey,
"*Corps Topographical Engineers.*"

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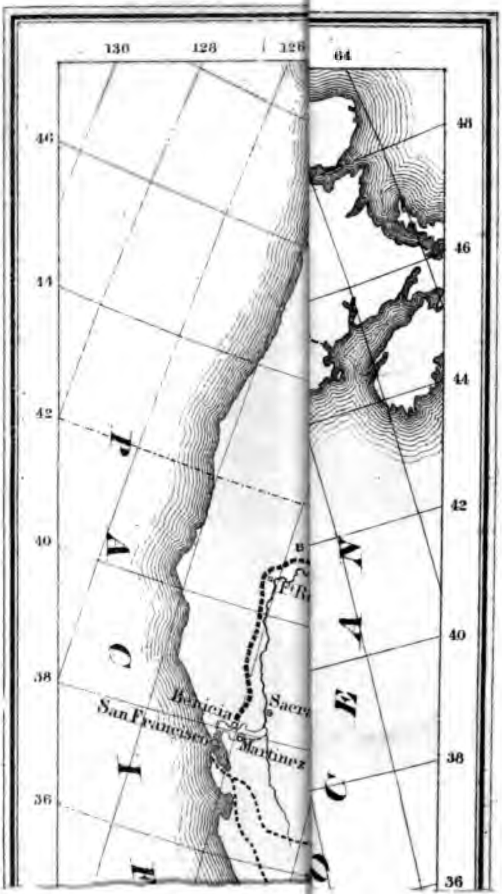

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